

# SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

Version 6.12

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GENERIC EU MSDS - NO COUNTRY SPECIFIC DATA - NO OEL DATA

## SECTION 1: Identification of the substance/mixture and of the company/undertaking

### 1.1 Product identifiers

Product name : Pentane

Product Number : 236705

Brand : Sigma-Aldrich

Index-No. : 601-006-00-1

REACH No. : 01-2119459286-30-XXXX

CAS-No. : 109-66-0

### 1.2 Relevant identified uses of the substance or mixture and uses advised against

Identified uses : Laboratory chemicals, Manufacture of substances

### 1.3

CHEMIKART

### 1.4 Emergency telephone

Emergency Phone # : 000 800 1007 141 (CHEMTREC)

## SECTION 2: Hazards identification

### 2.1 Classification of the substance or mixture

|                                                                                        |                                                        |
|----------------------------------------------------------------------------------------|--------------------------------------------------------|
| Flammable liquids, (Category 2)                                                        | H225: Highly flammable liquid and vapor.               |
| Specific target organ toxicity - single exposure, (Category 3), Central nervous system | H336: May cause drowsiness or dizziness.               |
| Aspiration hazard, (Category 1)                                                        | H304: May be fatal if swallowed and enters airways.    |
| Long-term (chronic) aquatic hazard, (Category 2)                                       | H411: Toxic to aquatic life with long lasting effects. |

## 2.2 Label elements

### Labelling according Regulation (EC) No 1272/2008

#### Pictogram

|                                      |                                                                                                |
|--------------------------------------|------------------------------------------------------------------------------------------------|
| Signal Word                          | Danger                                                                                         |
| Hazard Statements                    |                                                                                                |
| H225                                 | Highly flammable liquid and vapor.                                                             |
| H304                                 | May be fatal if swallowed and enters airways.                                                  |
| H336                                 | May cause drowsiness or dizziness.                                                             |
| H411                                 | Toxic to aquatic life with long lasting effects.                                               |
| Precautionary Statements             |                                                                                                |
| P210                                 | Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. |
| P233                                 | Keep container tightly closed.                                                                 |
| P240                                 | Ground and bond container and receiving equipment.                                             |
| P273                                 | Avoid release to the environment.                                                              |
| P301 + P310                          | IF SWALLOWED: Immediately call a POISON CENTER/ doctor.                                        |
| P331                                 | Do NOT induce vomiting.                                                                        |
| Supplemental Hazard information (EU) |                                                                                                |
| EUH066                               | Repeated exposure may cause skin dryness or cracking.                                          |

### Reduced Labeling (<= 125 ml)

#### Pictogram

|                                      |                                                         |
|--------------------------------------|---------------------------------------------------------|
| Signal Word                          | Danger                                                  |
| Hazard Statements                    |                                                         |
| H304                                 | May be fatal if swallowed and enters airways.           |
| Precautionary Statements             |                                                         |
| P301 + P310                          | IF SWALLOWED: Immediately call a POISON CENTER/ doctor. |
| P331                                 | Do NOT induce vomiting.                                 |
| Supplemental Hazard information (EU) |                                                         |
| EUH066                               | Repeated exposure may cause skin dryness or cracking.   |

## 2.3 Other hazards

This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.

#### Ecological information:

The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

#### Toxicological information:

The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

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## SECTION 3: Composition/information on ingredients

### 3.1 Substances

Formula : C<sub>5</sub>H<sub>12</sub>  
Molecular weight : 72,15 g/mol  
CAS-No. : 109-66-0  
EC-No. : 203-692-4  
Index-No. : 601-006-00-1

| Component      |              | Classification                                                                                                                              | Concentration |
|----------------|--------------|---------------------------------------------------------------------------------------------------------------------------------------------|---------------|
| <b>pentane</b> |              |                                                                                                                                             |               |
| CAS-No.        | 109-66-0     | Flam. Liq. 2; STOT SE 3;<br>Asp. Tox. 1; Aquatic<br>Chronic 2; H225, H336,<br>H304, H411<br>Concentration limits:<br>20 %: STOT SE 3, H336; | <= 100 %      |
| EC-No.         | 203-692-4    |                                                                                                                                             |               |
| Index-No.      | 601-006-00-1 |                                                                                                                                             |               |

For the full text of the H-Statements mentioned in this Section, see Section 16.

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## SECTION 4: First aid measures

### 4.1 Description of first-aid measures

#### General advice

Show this material safety data sheet to the doctor in attendance.

#### If inhaled

After inhalation: fresh air. Call in physician.

#### In case of skin contact

In case of skin contact: Take off immediately all contaminated clothing. Rinse skin with water/ shower.

#### In case of eye contact

After eye contact: rinse out with plenty of water. Remove contact lenses.

#### If swallowed

After swallowing: caution if victim vomits. Risk of aspiration! Keep airways free. Pulmonary failure possible after aspiration of vomit. Call a physician immediately.

### 4.2 Most important symptoms and effects, both acute and delayed

The most important known symptoms and effects are described in the labelling (see section 2.2) and/or in section 11

### 4.3 Indication of any immediate medical attention and special treatment needed

No data available

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## SECTION 5: Firefighting measures

### 5.1 Extinguishing media

#### Suitable extinguishing media

Carbon dioxide (CO<sub>2</sub>) Foam Dry powder

#### Unsuitable extinguishing media

For this substance/mixture no limitations of extinguishing agents are given.

## **5.2 Special hazards arising from the substance or mixture**

Carbon oxides

Combustible.

Pay attention to flashback.

Vapors are heavier than air and may spread along floors.

Development of hazardous combustion gases or vapours possible in the event of fire.

Forms explosive mixtures with air at ambient temperatures.

## **5.3 Advice for firefighters**

In the event of fire, wear self-contained breathing apparatus.

## **5.4 Further information**

Remove container from danger zone and cool with water. Prevent fire extinguishing water from contaminating surface water or the ground water system.

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## **SECTION 6: Accidental release measures**

### **6.1 Personal precautions, protective equipment and emergency procedures**

Advice for non-emergency personnel: Do not breathe vapors, aerosols. Avoid substance contact. Ensure adequate ventilation. Keep away from heat and sources of ignition.

Evacuate the danger area, observe emergency procedures, consult an expert.

For personal protection see section 8.

### **6.2 Environmental precautions**

Do not let product enter drains. Risk of explosion.

### **6.3 Methods and materials for containment and cleaning up**

Cover drains. Collect, bind, and pump off spills. Observe possible material restrictions (see sections 7 and 10). Take up carefully with liquid-absorbent material (e.g.

Chemizorb®). Dispose of properly. Clean up affected area.

### **6.4 Reference to other sections**

For disposal see section 13.

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## **SECTION 7: Handling and storage**

### **7.1 Precautions for safe handling**

#### **Advice on safe handling**

Work under hood. Do not inhale substance/mixture. Avoid generation of vapours/aerosols.

#### **Advice on protection against fire and explosion**

Keep away from open flames, hot surfaces and sources of ignition. Take precautionary measures against static discharge.

#### **Hygiene measures**

Change contaminated clothing. Preventive skin protection recommended. Wash hands after working with substance.

For precautions see section 2.2.

### **7.2 Conditions for safe storage, including any incompatibilities**

#### **Storage conditions**

Keep container tightly closed in a dry and well-ventilated place. Keep away from heat and sources of ignition.

Refrigerate before opening.

#### **Storage class**

Storage class (TRGS 510): 3: Flammable liquids

### 7.3 Specific end use(s)

Apart from the uses mentioned in section 1.2 no other specific uses are stipulated

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## SECTION 8: Exposure controls/personal protection

### 8.1 Control parameters

**Ingredients with workplace control parameters**

### 8.2 Exposure controls

**Personal protective equipment**

#### **Eye/face protection**

Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU). Safety glasses

#### **Skin protection**

This recommendation applies only to the product stated in the safety data sheet, supplied by us and for the designated use. When dissolving in or mixing with other substances and under conditions deviating from those stated in EN 16523-1 please contact the supplier of CE-approved gloves (e.g. KCL GmbH, D-36124 Eichenzell, Internet: [www.kcl.de](http://www.kcl.de)).

Full contact

Material: Nitrile rubber

Minimum layer thickness: 0,4 mm

Break through time: 480 min

Material tested: Camatril® (KCL 730 / Aldrich Z677442, Size M)

This recommendation applies only to the product stated in the safety data sheet, supplied by us and for the designated use. When dissolving in or mixing with other substances and under conditions deviating from those stated in EN 16523-1 please contact the supplier of CE-approved gloves (e.g. KCL GmbH, D-36124 Eichenzell, Internet: [www.kcl.de](http://www.kcl.de)).

Splash contact

Material: Nitrile rubber

Minimum layer thickness: 0,11 mm

Break through time: 10 min

Material tested: KCL 741 Dermatril® L

#### **Body Protection**

Flame retardant antistatic protective clothing.

#### **Respiratory protection**

required when vapours/aerosols are generated.

Our recommendations on filtering respiratory protection are based on the following standards: DIN EN 143, DIN 14387 and other accompanying standards relating to the used respiratory protection system.

Recommended Filter type: Filter type AX

The entrepreneur has to ensure that maintenance, cleaning and testing of respiratory protective devices are carried out according to the instructions of the producer. These measures have to be properly documented.

#### **Control of environmental exposure**

Do not let product enter drains. Risk of explosion.

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## SECTION 9: Physical and chemical properties

### 9.1 Information on basic physical and chemical properties

- |                                                 |                                                                                     |
|-------------------------------------------------|-------------------------------------------------------------------------------------|
| a) Physical state                               | clear, liquid                                                                       |
| b) Color                                        | colorless                                                                           |
| c) Odor                                         | benzine-like                                                                        |
| d) Melting point/freezing point                 | Melting point/ range: -130 °C - lit.                                                |
| e) Initial boiling point and boiling range      | 35 - 36 °C - lit.                                                                   |
| f) Flammability (solid, gas)                    | No data available                                                                   |
| g) Upper/lower flammability or explosive limits | Upper explosion limit: 8 %(V)<br>Lower explosion limit: 1,4 %(V)                    |
| h) Flash point                                  | -40 °C                                                                              |
| i) Autoignition temperature                     | 260,0 °C                                                                            |
| j) Decomposition temperature                    | No data available                                                                   |
| k) pH                                           | No data available                                                                   |
| l) Viscosity                                    | Viscosity, kinematic: No data available<br>Viscosity, dynamic: 0,224 mPa.s at 25 °C |
| m) Water solubility                             | 0,038 g/l at 20 °C - partly soluble                                                 |
| n) Partition coefficient: n-octanol/water       | log Pow: 3,45 at 25 °C - Bioaccumulation is not expected.                           |
| o) Vapor pressure                               | 585,9 hPa at 21,13 °C                                                               |
| p) Density                                      | 0,626 g/cm <sup>3</sup> at 25 °C - lit.                                             |
| Relative density                                | No data available                                                                   |
| q) Relative vapor density                       | No data available                                                                   |
| r) Particle characteristics                     | No data available                                                                   |
|                                                 |                                                                                     |
| s) Explosive properties                         | No data available                                                                   |
| t) Oxidizing properties                         | none                                                                                |

### 9.2 Other safety information

- |                        |                                   |
|------------------------|-----------------------------------|
| Surface tension        | ca.15,49 mN/m at 25 °C            |
|                        |                                   |
| Relative vapor density | 2,49 - (refers to pure substance) |

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## SECTION 10: Stability and reactivity

### 10.1 Reactivity

Vapors may form explosive mixture with air.

### 10.2 Chemical stability

The product is chemically stable under standard ambient conditions (room temperature) .

### 10.3 Possibility of hazardous reactions

Violent reactions possible with:

Nitric acid

Strong oxidizing agents

halogens

### 10.4 Conditions to avoid

Warming.

### 10.5 Incompatible materials

rubber, various plastics

### 10.6 Hazardous decomposition products

In the event of fire: see section 5

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## SECTION 11: Toxicological information

### 11.1 Information on toxicological effects

#### Acute toxicity

LD50 Oral - Rat - male and female - > 2.000 mg/kg

(OECD Test Guideline 401)

LC50 Inhalation - Rat - male and female - 4 h - > 25,3 mg/l - vapor

(OECD Test Guideline 403)

Remarks: (in analogy to similar products)

The value is given in analogy to the following substances: cyclopentane

Dermal: No data available

#### Skin corrosion/irritation

Skin - Rabbit

Result: No skin irritation - 4 h

(OECD Test Guideline 404)

#### Serious eye damage/eye irritation

Eyes - Rabbit

Result: No eye irritation

(OECD Test Guideline 405)

#### Respiratory or skin sensitization

Buehler Test - Guinea pig

Result: negative

(OECD Test Guideline 406)

#### Germ cell mutagenicity

Test Type: Mutagenicity (mammal cell test): chromosome aberration.

Test system: Chinese hamster ovary cells

Metabolic activation: with and without metabolic activation

Method: Regulation (EC) No. 440/2008, Annex, B.10

Result: negative

Test Type: Ames test  
Test system: Salmonella typhimurium  
Metabolic activation: with and without metabolic activation  
Method: OECD Test Guideline 471  
Result: negative

Test Type: In vivo micronucleus test  
Species: Rat  
Cell type: Bone marrow  
Application Route: inhalation (vapor)  
Method: Mutagenicity (micronucleus test)  
Result: negative

**Carcinogenicity**

No data available

**Reproductive toxicity**

No data available

**Specific target organ toxicity - single exposure**

May cause drowsiness or dizziness. - Central nervous system

**Specific target organ toxicity - repeated exposure**

No data available

**Aspiration hazard**

May be fatal if swallowed and enters airways.

Aspiration hazard, Aspiration may cause pulmonary edema and pneumonitis.

## 11.2 Additional Information

**Endocrine disrupting properties**

**Product:**

Assessment

The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

RTECS: RZ9450000

Contact with eyes can cause:, Redness, Blurred vision, Provokes tears., Prolonged or repeated contact with skin may cause:, defatting, Dermatitis, Central nervous system depression, Damage to the lungs.

To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

Stomach - Irregularities - Based on Human Evidence

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## SECTION 12: Ecological information

### 12.1 Toxicity

|                                       |                                                                                                        |
|---------------------------------------|--------------------------------------------------------------------------------------------------------|
| Toxicity to fish                      | static test LC50 - Oncorhynchus mykiss (rainbow trout) - 4,26 mg/l - 96 h<br>(OECD Test Guideline 203) |
| Toxicity to daphnia and other aquatic | static test EC50 - Daphnia magna (Water flea) - 2,7 mg/l - 48 h<br>Remarks: (ECHA)                     |

invertebrates

Toxicity to algae      static test ErC50 - Selenastrum capricornutum (green algae) - 10,7 mg/l - 72 h  
(OECD Test Guideline 201)

static test NOEC - Selenastrum capricornutum (green algae) - 7,51 mg/l - 72 h  
(OECD Test Guideline 201)

## **12.2 Persistence and degradability**

Biodegradability      aerobic - Exposure time 28 d  
Result: 87 % - Readily biodegradable.  
(OECD Test Guideline 301F)

## **12.3 Bioaccumulative potential**

No data available

## **12.4 Mobility in soil**

No data available

## **12.5 Results of PBT and vPvB assessment**

This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.

## **12.6 Endocrine disrupting properties**

### **Product:**

Assessment      : The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

## **12.7 Other adverse effects**

Avoid release to the environment. Do not empty into drains.

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## **SECTION 13: Disposal considerations**

### **13.1 Waste treatment methods**

No data available

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## **SECTION 14: Transport information**

### **14.1 UN number**

ADR/RID: 1265

IMDG: 1265

IATA: 1265

### **14.2 UN proper shipping name**

ADR/RID: PENTANES

IMDG: PENTANES

IATA: Pentanes

**14.3 Transport hazard class(es)**

ADR/RID: 3

IMDG: 3

IATA: 3

**14.4 Packaging group**

ADR/RID: I

IMDG: I

IATA: I

**14.5 Environmental hazards**

ADR/RID: yes

IMDG Marine pollutant: yes

IATA: no

**14.6 Special precautions for user**

Tunnel restriction code : (D/E)

Further information : No data available

**14.7 Maritime transport in bulk according to IMO instruments**

Not applicable for product as supplied.

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**SECTION 15: Regulatory information****15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture**

This material safety data sheet complies with the requirements of Regulation (EC) No. 1907/2006.

**National legislation**

Seveso III: Directive 2012/18/EU of the European Parliament and of the Council on the control of major-accident hazards involving dangerous substances.

E2

ENVIRONMENTAL HAZARDS

P5c

FLAMMABLE LIQUIDS

**Other regulations**

Take note of Dir 94/33/EC on the protection of young people at work.

**15.2 Chemical Safety Assessment**

For this product a chemical safety assessment was not carried out

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**SECTION 16: Other information****Full text of H-Statements**

|        |                                                       |
|--------|-------------------------------------------------------|
| H225   | Highly flammable liquid and vapor.                    |
| H304   | May be fatal if swallowed and enters airways.         |
| H336   | May cause drowsiness or dizziness.                    |
| H411   | Toxic to aquatic life with long lasting effects.      |
| EUH066 | Repeated exposure may cause skin dryness or cracking. |

## Full text of other abbreviations

ADN - European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways; ADR - Agreement concerning the International Carriage of Dangerous Goods by Road; AIIC - Australian Inventory of Industrial Chemicals; ASTM - American Society for the Testing of Materials; bw - Body weight; CMR - Carcinogen, Mutagen or Reproductive Toxicant; DIN - Standard of the German Institute for Standardisation; DSL - Domestic Substances List (Canada); ECx - Concentration associated with x% response; ELx - Loading rate associated with x% response; EmS - Emergency Schedule; ENCS - Existing and New Chemical Substances (Japan); ErCx - Concentration associated with x% growth rate response; GHS - Globally Harmonized System; GLP - Good Laboratory Practice; IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; IBC - International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk; IC50 - Half maximal inhibitory concentration; ICAO - International Civil Aviation Organization; IECSC - Inventory of Existing Chemical Substances in China; IMDG - International Maritime Dangerous Goods; IMO - International Maritime Organization; ISHL - Industrial Safety and Health Law (Japan); ISO - International Organisation for Standardization; KECI - Korea Existing Chemicals Inventory; LC50 - Lethal Concentration to 50 % of a test population; LD50 - Lethal Dose to 50% of a test population (Median Lethal Dose); MARPOL - International Convention for the Prevention of Pollution from Ships; n.o.s. - Not Otherwise Specified; NO(A)EC - No Observed (Adverse) Effect Concentration; NO(A)EL - No Observed (Adverse) Effect Level; NOELR - No Observable Effect Loading Rate; NZIoC - New Zealand Inventory of Chemicals; OECD - Organization for Economic Co-operation and Development; OPPTS - Office of Chemical Safety and Pollution Prevention; PBT - Persistent, Bioaccumulative and Toxic substance; PICCS - Philippines Inventory of Chemicals and Chemical Substances; (Q)SAR - (Quantitative) Structure Activity Relationship; REACH - Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals; RID - Regulations concerning the International Carriage of Dangerous Goods by Rail; SADT - Self-Accelerating Decomposition Temperature; SDS - Safety Data Sheet; TCSI - Taiwan Chemical Substance Inventory; TECI - Thailand Existing Chemicals Inventory; TSCA - Toxic Substances Control Act (United States); UN - United Nations; UNRTDG - United Nations Recommendations on the Transport of Dangerous Goods; vPvB - Very Persistent and Very Bioaccumulative

## Further information

The information is believed to be correct but is not exhaustive and will be used solely as a guideline, which is based on current knowledge of the chemical substance or mixture and is applicable to appropriate safety precautions for the product. It does not represent any guarantee of the properties of the product. Sigma-Aldrich Corporation and its Affiliates shall not be held liable for any damage resulting from handling or from contact with the above product. See [www.sigma-aldrich.com](http://www.sigma-aldrich.com) and/or the reverse side of invoice or packing slip for additional terms and conditions of sale.

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